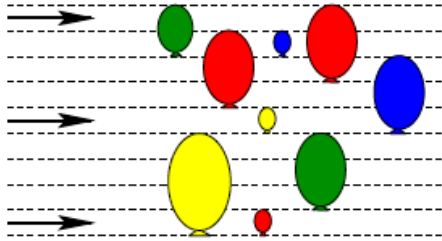


Math Kangaroo 2018 Sample Questions

LEVELS 3 AND 4

SAMPLE QUESTION FOR 3 POINTS

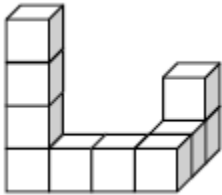
The picture shows 3 arrows that are flying and 9 balloons that can't move. When an arrow hits a balloon, the balloon pops, and the arrow keeps flying in the same direction. How many balloons will be hit by the flying arrows?



- A) 2 B) 3 C) 4 D) 5 E) 6

SAMPLE QUESTION FOR 4 POINTS

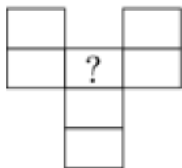
Toby glues 10 cubes together to make the structure shown to the right. He paints the whole structure, even the bottom. How many cubes are painted on exactly 4 of their faces?



- A) 6 B) 7 C) 8 D) 9 E) 10

SAMPLE QUESTION FOR 5 POINTS

Leon wants to write the numbers from 1 to 7 in the grid shown. Two consecutive numbers cannot be written in two neighboring cells. Neighboring cells are those that meet at the edge or at a corner. What numbers can he write in the cell marked with the question mark?



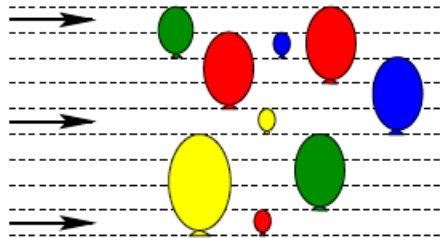
- A) all seven numbers
B) all of the odd numbers
C) all of the even numbers
D) only the number 4
E) only the numbers 1 or 7

Math Kangaroo 2018 Sample Questions

LEVELS 3 AND 4 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

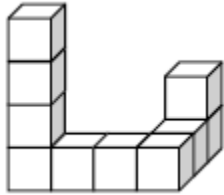
The picture shows 3 arrows that are flying and 9 balloons that can't move. When an arrow hits a balloon, the balloon pops, and the arrow keeps flying in the same direction. How many balloons will be hit by the flying arrows?



- A) 2 B) 3 C) 4 D) 5 **E) 6**

SAMPLE QUESTION FOR 4 POINTS

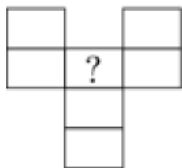
Toby glues 10 cubes together to make the structure shown to the right. He paints the whole structure, even the bottom. How many cubes are painted on exactly 4 of their faces?



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B) all of the odd numbers
C) all of the even numbers
D) only the number 4
E) only the numbers 1 or 7

Math Kangaroo 2018 Sample Questions

LEVELS 5 AND 6

SAMPLE QUESTION FOR 3 POINTS

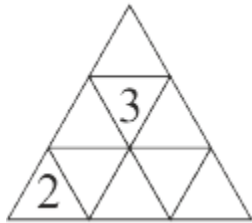
Alice subtracted two 2-digit numbers. Then she painted two cells. What is the sum of the two digits in the painted cells?

$$\blacksquare 3 - 2 \blacksquare = 25$$

- A) 8 B) 9 C) 12 D) 13 E) 15

SAMPLE QUESTION FOR 4 POINTS

Emily wants to enter a number into each cell of the triangular table. The sum of the numbers in any two cells with a common edge must be the same. She has already entered two numbers. What is the sum of all the numbers in the table?



- A) 18 B) 20 C) 21 D) 22 E) impossible to determine

SAMPLE QUESTION FOR 5 POINTS

Five balls, A, B, C, D, and E, weigh 30 g, 50 g, 50 g, 50 g, and 80 g each, not necessarily in that order. Which ball weighs 30 g?



- A) A B) B C) C D) D E) E

Math Kangaroo 2018 Sample Questions

LEVELS 5 AND 6 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

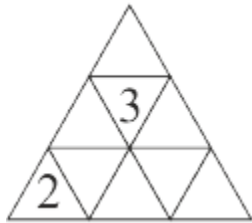
Alice subtracted two 2-digit numbers. Then she painted two cells. What is the sum of the two digits in the painted cells?

$$\begin{array}{r} 32 \\ - 23 \\ \hline 25 \end{array}$$

- B) 8 B) 9 C) 12 **D) 13** E) 15

SAMPLE QUESTION FOR 4 POINTS

Emily wants to enter a number into each cell of the triangular table. The sum of the numbers in any two cells with a common edge must be the same. She has already entered two numbers. What is the sum of all the numbers in the table?



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SAMPLE QUESTION FOR 5 POINTS

Five balls, A, B, C, D, and E, weigh 30 g, 50 g, 50 g, 50 g, and 80 g each, not necessarily in that order. Which ball weighs 30 g?



- A) A B) B **C) C** D) D E) E

Math Kangaroo 2018 Sample Questions

LEVELS 7 AND 8

SAMPLE QUESTION FOR 3 POINTS

When the letters of the word MAMA are written vertically above one another, the word has a vertical line of symmetry. Which of these words also has a vertical line of symmetry when written in the same way?



- A) ROOT B) BOOM C) BOOT D) LOOT E) TOOT

SAMPLE QUESTION FOR 4 POINTS

A rectangle is divided into 40 identical squares. The rectangle contains more than one row of squares. Andrew found the middle row of squares and colored it in. How many squares did he not color?

- A) 20 B) 30 C) 32 D) 35 E) 39

SAMPLE QUESTION FOR 5 POINTS

Domino tiles are said to be arranged correctly if the number of dots at the ends that touch are the same. Peter laid six dominoes in a line as shown in the diagram. He can make a move by either swapping the position of any two dominoes or by rotating one domino. What is the smallest number of moves he needs to make to arrange all the tiles correctly?



- A) 1 B) 2 C) 3 D) 4 E) It is impossible to do.

Math Kangaroo 2018 Sample Questions

LEVELS 7 AND 8 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

When the letters of the word MAMA are written vertically above one another, the word has a vertical line of symmetry. Which of these words also has a vertical line of symmetry when written in the same way?



- A) ROOT B) BOOM C) BOOT D) LOOT **E) TOOT**

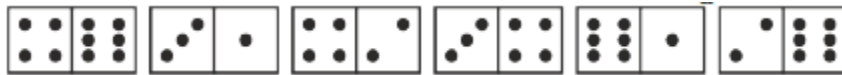
SAMPLE QUESTION FOR 4 POINTS

A rectangle is divided into 40 identical squares. The rectangle contains more than one row of squares. Andrew found the middle row of squares and colored it in. How many squares did he not color?

- A) 20 B) 30 **C) 32** D) 35 E) 39

SAMPLE QUESTION FOR 5 POINTS

Domino tiles are said to be arranged correctly if the number of dots at the ends that touch are the same. Paulius laid six dominoes in a line as shown in the diagram. He can make a move by either swapping the position of any two dominoes or by rotating one domino. What is the smallest number of moves he needs to make to arrange all the tiles correctly?



- A) 1 B) 2 **C) 3** D) 4 E) It is impossible to do.

Math Kangaroo 2018 Sample Questions

LEVELS 9 AND 10

SAMPLE QUESTION FOR 3 POINTS

In my family each child has at least two brothers and at least one sister. What is the smallest possible number of children in my family?

- A) 3 B) 4 C) 5 D) 6 E) 7

SAMPLE QUESTION FOR 4 POINTS

Eight congruent semicircles are drawn inside a square with a side length of 4. What is the area of the non-shaded part of the square?



- A) 2π B) 8 C) $6 + \pi$ D) $3\pi - 2$ E) 3π

SAMPLE QUESTION FOR 5 POINTS

Diana draws a rectangular grid of 12 squares on squared paper. Some of the squares are painted black. In each blank square she writes the number of black squares that share a side with it. The figure shows an example. Now she does the same in a rectangular grid with 2018 squares. What is the maximum value that she can obtain as the result of the sum of all the numbers in the grid?

1	■	2	1
0	3	■	■
1	■	2	1

- A) 1262 B) 2016 C) 2018 D) 3025 E) 3027

Math Kangaroo 2018 Sample Questions

LEVELS 9 AND 10 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

In my family each child has at least two brothers and at least one sister. What is the smallest possible number of children in my family?

- A) 3 B) 4 C) 5 D) 6 E) 7

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1	■	2	1
0	3	■	■
1	■	2	1

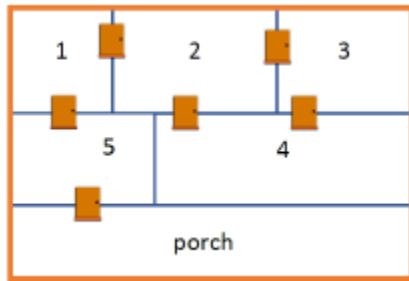
- A) 1262 B) 2016 C) 2018 D) 3025 E) 3027

Math Kangaroo 2018 Sample Questions

LEVELS 11 AND 12

SAMPLE QUESTION FOR 3 POINTS

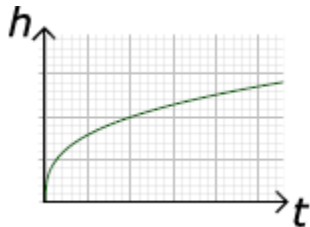
The figure shows the floor plan of Renate's house. Renate enters her house from the porch and walks through each door exactly once. In which room does she end up?



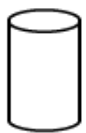
- A) 1 B) 2 C) 3 D) 4 E) 5

SAMPLE QUESTION FOR 4 POINTS

A vase is filled up to the top with water, at a constant rate. The graph shows the height h of the water as a function of time t .



Which of the following can be the shape of the vase?



A)



B)



C)



D)



E)

SAMPLE QUESTION FOR 5 POINTS

There are 40% more girls than boys in a class. How many pupils are in this class if the probability that a two-person delegation selected at random consists of a girl and a boy equals $1/2$?

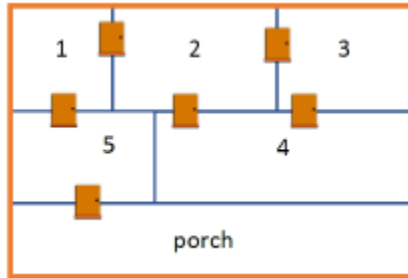
- A) 20 B) 24 C) 36 D) 38 E) This situation is not possible.

Math Kangaroo 2018 Sample Questions

LEVELS 11 AND 12 ANSWERS

SAMPLE QUESTION FOR 3 POINTS

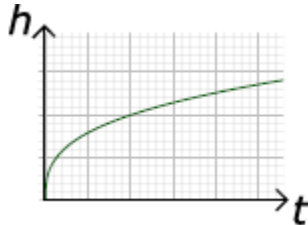
The figure shows the floor plan of Renate's house. Renate enters her house from the porch and walks through each door exactly once. In which room does she end up?



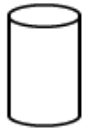
- A) 1 **B) 2** C) 3 D) 4 E) 5

SAMPLE QUESTION FOR 4 POINTS

A vase is filled up to the top with water, at a constant rate. The graph shows the height h of the water as a function of time t .



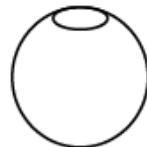
Which of the following can be the shape of the vase?



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B)



C)



D)



E)

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There are 40% more girls than boys in a class. How many pupils are in this class if the probability that a two-person delegation selected at random consists of a girl and a boy equals $1/2$?

- A) 20 B) 24 **C) 36** D) 38 E) This situation is not possible.